

CANFIELD (V.B.) *Compliments of the Writer.*  
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THE EARLY DETECTION OF  
PULMONARY CONSUMPTION.

BY

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OF BALTIMORE.

Chief of Chest Clinic, University of Maryland.



*presented by the author*

BALTIMORE:  
JOURNAL PUBLISHING COMPANY PRINT.  
No. 209 Park Avenue,  
1890.

REPRINT FROM THE MARYLAND MEDICAL JOURNAL.



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## THE EARLY DETECTION OF PULMONARY CONSUMPTION.\*

The relation of rare cases, the presentation of unusual specimens, and the reading of deep papers, make up the usual programme of our medical societies. Still we should not forget that in the absence of anything new under our present luminary, old subjects may often with advantage be renewed, typical cases and specimens may be exhibited, and indeed facts must be repeated and repeated until their importance becomes impressed upon each one of us. It is this reason that has induced me to take up the old theme of the early detection of pulmonary consumption. There can be no doubt in any one's mind but that prevention is better than cure. Unfortunately, in pulmonary consumption the physician is generally called in too late even to hope to effect a cure. Up to within a few years ago,

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Read before the Medical and Chirurgical State Faculty of Maryland at its Semi-annual Meeting held at Hagerstown, Md., Nov. 12 and 13, 1889.

consumption when detected was considered absolutely hopeless, and the physician's only duty was to try to alleviate the accompanying suffering and produce a painless euthanasia. This plan of treatment was followed because the disease was recognized at too late a stage. Although the judicious use of auscultation and percussion, and in fact, of what is called physical diagnosis in general, had done much toward mapping out with comparative accuracy, the locality and extent of the lung lesion, still even before this method was used, the keen observer by other signs and symptoms often suspected the fatal disease at a time when the most skilful diagnostician could have found no physical signs of it.

Now that that newer department of medicine, bacteriology, which too many consider unpractical and as belonging to the pathological laboratory, has given us a more certain evidence of the early approach of consumption, we need rarely be in doubt. Ever since the discovery of the bacillus tuberculosis by Koch, few or probably now no important observers will deny its causative relation to tuberculosis in general and pulmonary consumption in particular. The discovery by Koch has given us one solid fact. If we find

the tubercle bacillus in the sputa, consumption is present, and if after a sufficient number of examinations the bacillus is not found, then there is, generally speaking, no consumption. I was in Vienna at the time that Koch's discovery was announced, and noticed there how at first it was received with incredulity by Nothnagel, Bamberger and others, and how they all gradually came over to Koch's opinion; and again and again have I seen the statement, no bacillus, no consumption, and where there is a bacillus there is consumption, proved in the wards of the General Hospital at Vienna, and in the Charité at Berlin. This ocular demonstration and positive proof was much more convincing to me than if I had simply read these statements in the various journals and textbooks. In every case examined in the wards in the foreign hospitals, clinical and microscopical examinations are made of the secretion and excretion of each patient in the little laboratory attached to each ward, just as it is done at the Johns Hopkins Hospital. Thus it was that in a great many cases where little history and absolutely no physical signs could be found that the microscope showed the presence or absence of bacilli, and thus rendered the diagnosis certain.



In the large number of cases under my care in the Chest Department of the University Dispensary, Baltimore, and of some in private practice, I have had frequently cases presenting a history of obstinate continued tickling cough, hoarseness, fever, emaciation, but with no marked physical signs. In such cases I always examine a specimen of the morning sputa and I have often had the satisfaction of early detecting the bacilli. Although such an observer as von Ziemssen may say that tuberculosis of the larynx is always secondary to that disease of the lungs, still we know that the larynx often gives the first cause of complaint, and through this the disease has been detected when there were absolutely no physical signs in the lungs.\* In most of my cases, even after the early diagnosis, the fatal result could not be averted, but in some, quick action has succeeded in staying the progress of the wasting, and a cessation of the symptoms. Of the poorer class at the dispensary, I sent a selected number to a small private hospital which I attend, and several times I have been rewarded by seeing

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\*Since writing the above, a case which had been examined by several physicians and pronounced nervous cough, came into my hands. Auscultation and percussion yielded negative results, but the first examination of the sputa revealed bacilli in abundance.



great improvement, and in more than one case stopping the disease. In several cases detected very early by the presence of bacilli, the climatic cure was insisted upon at once, and, as you all know, this is the cure giving the most hope of success. The great trouble was that in young people, and especially men, as I noticed in one case, the desire to go on with their work has cut short the climatic treatment and started up the disease afresh. One case which I had last year was almost well, but a return to business renewed all the old symptoms, and before he could sufficiently rally he died. In another case, which went so far as to have breaking down of the right lung with a cavity, this cavity is now so small that it can only be found with great care.

In examining sputa the two most important abnormal ingredients are elastic tissue and tubercle bacilli. The latter alone are pathognomonic of pulmonary consumption; the former may be present in any breaking down of the lung whether tubercular or not. There has been an attempt made to measure the severity of the case by the number of bacilli found. This is not always practical, as many bad cases show few bacilli and light cases expectorate sputa

laden with bacilli. What I claim then, from my own experience only, and it is nothing original, is that the microscopical examination of the sputa for tubercle bacilli is so easy, and in doubtful cases so important, that no physician should fail to undertake it or have it done for him for the sake of the patient. The early detection of such cases as apparently begin in the larynx, or have sufficient cough, emaciation and fever to cast suspicion on the lungs, will enable the patient to be sent to a proper climate before it is too late, and from this treatment there is much to be expected as we all know by experience.

A few words about the technique will close this subject. The method of looking for these bacilli is soon learned after a little practice by one already familiar with the use of the microscope. Others may not find it so easy, and there may be danger of drawing too hasty conclusions by those not versed in these matters. To examine the sputa for tubercle bacilli, the patient is requested to bring a specimen coughed up in the morning when it is free from food on waking up. I generally have it expectorated into a wide-mouth bottle, and then tightly corked. This is labeled at once and may be examined at once

which is best, or may be delayed several days without much harm. The bottle is tipped up on the side and a bit of those yellowish or opaque masses is spread out on a clean cover glass with a sterilized platinum needle, or is taken up with sterilized forceps and put in the centre of a clean cover glass upon which a second cover glass is pressed, and then the two are drawn apart and allowed to dry. They are then passed through the alcohol or Bunsen flame to coagulate the albuminous substance and fix the layer on the glass. Good microscopists, with the aid of strong lenses and strong light may have detected the bacilli unstained, but such a procedure is uncertain and time wasting. The principle of rendering the bacilli visible by staining them has been clearly enunciated by Koch and modified, *but not improved*, by a host of followers. This principle of all is about the same, namely, to overstain the specimen and then decolorize, experience having shown that the bacilli retain their color better than the cells and other matter. The stains most commonly used are fuchsine or magenta, properly called hydrochlorate of rosaniline, and methyl-violet or gentian-violet. The coloring fluid which I find most convenient and durable is made up of

Fuchsine (by weight). . . . 1 part.  
 Absolute alcohol . . . . 10 parts.  
 Solution carbolic acid(5 per ct.) 100 “

This keeps better and longer than the ordinary aniline solutions, which should be prepared fresh for every examination. The cover glass, with sputa side downwards, may be floated on the staining solution in a watch glass which is held on a wire gauze over the flame to hasten the coloring, or a few drops of the stain may be dropped on the cover glass, which is then cautiously held over the flame high above it until bubbles break on the surface; the glass is then dipped into diluted nitric acid (one to three or four), until slightly decolorized, then directly into water, to stop the decolorizing process, or some prefer to pass it from the acid into alcohol. For immediate examination it is laid on a slide, the excess of liquid taken up by blotting paper and examined. An immersion lens is generally used to find these bacilli, but good dry lenses are made of sufficient strength and definition, such as the one I here show you, made by Queen, of Philadelphia. Indeed, the bacilli may be recognized with 350 diameters, although it is not desirable to use less than 500. The method of staining and double staining other than

these I shall not mention, and will only add, in conclusion, that I shall be pleased after the session, to demonstrate to any of the members the method described here.

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